UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

NORTHPEAK WIRELESS, LLC,

Plaintiff,

v.

3COM CORPORATION, et al.,

Defendants.

Case No. 09-cv-00602-SI

CLAIM CONSTRUCTION ORDER FOR U.S. PATENT NO. 4,977,577

On August 26, 2015, the Court heard argument on the parties' proposed claim constructions. Having considered the arguments made by the parties and the papers submitted, the Court construes the disputed terms as follows.

BACKGROUND

I. Procedural Background

On November 1, 2008, North Peak filed a complaint alleging that defendants infringed US Patent Nos. 4,977,577 (the '577 Patent) and 5,987,058 (the '058 Patent). Docket No. 1. On January 1, 2009 and March 6, 2009 Intel filed motions to intervene. On March 27, 2009, the Court granted Intel's motion. Docket No. 335. In September of 2009, Intel filed an *ex parte* reexamination request for the '577 and '058 Patents with the U.S. Patent and Trademark Office ("PTO"). Docket No. 489, 7/24/14 Joint Status Report. The examiner found the challenged claims of the '058 patent to be unpatentable. *Id.* On June 28, 2011, the PTO found that all the challenged claims of the '577 Patent were patentable. *Id.* On August 30, 2013, Intel initiated a second *ex parte* reexamination request for the '577 Patent, and on May 20, 2014, the PTO once again confirmed the patentability of the challenged claims. *Id.* Now before the Court, are the parties' claim

construction briefs. Docket Nos. 573, 575, 580.

II. Factual Background

The '577 Patent, entitled "Wireless Alarm System," discloses a system which employs direct sequence spread spectrum ("DSSS") technology to transmit radio frequency ("RF") signals. Sensors, placed throughout a building or a room, are used to detect events such as "smoke, heat, [or] unauthorized entry." The '577 Patent 1:66. The sensors then transmit messages to one-way spread spectrum transmitters, which then relay the message to receivers using RF signals. The receivers, in turn, relay the message to a computer for display. *Id.* 5:22-25.

The transmitters send out data packets which are comprised of a "preamble," followed by an "address," followed by "data." The preamble tells the designated receiver to "turn on"; this process is known as synchronization. The address identifies which transmitter is sending the message, and can sometimes also identify which receiver is the desired recipient. The data provides the underlying message (i.e. "smoke detected"). Each component part of the data packet is comprised of a series of 0s and 1s, known as "bits." These bits are stored in designated "registers" ("preamble register," "address register," "data register").

The bits move through the registers one at a time, pass through a resistor, and enter into an oscillator. As they enter the oscillator, they are modulated using the DSSS technique.[1] This technique involves the use of a "chip code" which takes each individual bit from the preamble, address, and data registers, and "spreads" them into a series of 1s and 0s – known as "chips" (the chip code is also stored in a dedicated register and passes through a resistor before entering the oscillator). For example, let us say that the chip code modulates every 1-bit into a series of five 1s ("11111"), and modulates every 0-bit into a series of five 0s ("00000"). The receivers are equipped with the same chip code as the transmitters, which allows them to decode the chips back into bits.

[1] The parties disagree as to where the spreading actually occurs. Plaintiff contends that spreading occurs where the two resistors meet, *see* '577 Patent Fig. 2 at R6, R7, while defendants claim that spreading occurs in the oscillator. *See id.* Fig. 2 at 2.

An advantage of using the DSSS technique is that it spreads the bits into a longer pattern of chips, and thereby increases the likelihood that the intended RF signal makes it to the intended receiver. This is because the RF signals have to contend with interference (i.e. other RF signals, or electromagnetic waves) which may block part or all of the desired signal. Using the example above, if the transmitter were to send the message "11111," and two of the three 1-chips were blocked by interference, the receiver would still be able to decode the message as a 1-bit. Conversely, if the transmitter did not employ DSSS, and simply sent a single 1-bit, it carries a greater risk that the entire message will be lost to interference.

This process of using spread spectrum technology to modulate data packets comprised of a preamble, address, and data to send RF signals has been in existence for many decades. *See e.g.* Def. Exh. B, Kahn, Robert E., et al., *Advances in Packet Radio Technology*, Proceedings of the IEEE, Vol. 66 No. 11 (Nov. 1978); Def. Exh. C, Dickson, F.H., *Packet Radio Communications, Quarterly Technical Report*, NTIS #AD786155, Collins Radio Company (Sept. 1974). However, as will be discussed in further detail below, plaintiffs successfully distinguished the '577 Patent from prior art during both of the reexaminations.

North Peak asserts Claims 9, 12, 13 and 14 against defendants. These claims cover only the transmitters – not the sensors, receivers, or computer. The parties dispute the construction of nine terms that appear in these claims.

LEGAL STANDARD

I. Claim Construction Principles

Claim construction is a matter of law. *Markman v. Westview Instr., Inc.*, 517 U.S. 370, 372 (1996). Terms contained in claims are "generally given their ordinary and customary meaning." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Id.* at 1312. In determining the proper construction of a claim, a court begins with the intrinsic evidence of record, consisting of the claim language, the patent specification, and, if in evidence, the prosecution history. *Id.* at

1313; *see also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). "The appropriate starting point . . . is always with the language of the asserted claim itself." *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998); *see also Abtox, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed. Cir. 1997).

Accordingly, although claims speak to those skilled in the art, claim terms are construed in light of their ordinary and accustomed meaning, unless examination of the specification, prosecution history, and other claims indicates that the inventor intended otherwise. *See Electro Medical Systems, S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1053 (Fed. Cir. 1994). The written description can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format. *SciMed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc.*, 242 F.3d 1337, 1344 (Fed. Cir. 2001). In other words, the specification may define claim terms "by implication" such that the meaning may be "found in or ascertained by a reading of the patent documents." *Vitronics*, 90 F.3d at 1584 n.6.

In addition, the claims must be read in view of the specification. *Markman*, 52 F.3d at 978. Although claims are interpreted in light of the specification, this "does not mean that everything expressed in the specification must be read into all the claims." *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957 (Fed. Cir. 1983). For instance, limitations from a preferred embodiment described in the specification generally should not be read into the claim language. *See Comark*, 156 F.3d at 1187. However, it is a fundamental rule that "claims must be construed so as to be consistent with the specification." *Phillips*, 415 F.3d at 1316. Therefore, if the specification reveals an intentional disclaimer or disavowal of claim scope, the claims must be read consistently with that limitation. *Id.*

Finally, the Court may consider the prosecution history of the patent, if in evidence. *Markman*, 52 F.3d at 980. The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution. *See Southwall Technologies, Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995). In most situations, analysis of this intrinsic evidence alone will resolve claim construction disputes. *See Vitronics*, 90 F.3d at 1583.

Courts should not rely on extrinsic evidence in claim construction to contradict the meaning of claims discernable from examination of the claims, the written description, and the prosecution history. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (citing *Vitronics*, 90 F.3d at 1583). However, it is entirely appropriate "for a court to consult trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent file is not inconsistent with clearly expressed, plainly apposite, and widely held understandings in the pertinent technical field." *Id.* Extrinsic evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317. All extrinsic evidence should be evaluated in light of the intrinsic evidence. *Id.* at 1319.

II. Means-Plus-Function Terms

Means-plus-function terms are governed by 35 U.S.C. § 112(f):

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Under this "provision, an applicant can describe an element of his invention by the result accomplished or the function served, rather than describing the item or element to be used (*e.g.*, 'a means of connecting Part A to Part B,' rather than 'a two-penny nail')." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 27 (1997). When using the means-plus-function format, "[t]he applicant must describe in the patent specification some structure which performs the specified function." *Valmont Industries, Inc. v. Reinke Manufacturing Co., Inc.*, 983 F.2d 1039, 1042 (Fed.Cir.1993). "The first step in construing such a limitation is a determination of the function of the means-plus-function limitation. The next step is to determine the corresponding structure described in the specification and equivalents thereof. Structure disclosed in the specification is 'corresponding' structure only if the specification . . . clearly links or associates that structure to the function recited in the claim." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001) (internal quotations and citations omitted). It is

therefore not enough that structures be able to perform the corresponding function if they are not "clearly linked" in the specification. *Id.* "The 'cost' of using a § 112[f] function statement, especially if done unintentionally, is that the scope of the claim is restricted to the particular structures or acts disclosed in the specification, as well as their equivalents." *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, No. IP96-1718-C-H/G, 2000 WL 1765358, at *11 (S.D. Ind. Nov. 29, 2000) (citing *Personalized Media Communications, LLC v. International Trade Comm'n*, 161 F.3d 696, 703 (Fed.Cir.1998)).

The burden of proof that a disputed claim is subject to § 112(f) rests with the party asserting the means-plus-function construction. *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003). While the use of the word "means" creates a presumption of a means-plus-function term, it is not by itself sufficient. *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1347 (Fed.Cir. 2002) ("mere use of the word 'means' after a limitation, without more, does not suffice to make that limitation a means-plus-function limitation."). The presumption is rebutted if the claim recites sufficient structure to perform the claimed function. *Id.*; *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996).

DISCUSSION

The asserted claims, with the disputed terms in bold are as follows:

> 9. An apparatus coupled to **modulation means** having a modulation input for **modulating an RF signal** with spread spectrum for reducing interference, for controlling said spread spectrum transmitter, said apparatus comprising:
>
> **chip-code-generation means** coupled to the modulation input of said **modulation means** for **storing** a spread spectrum chip code, and outputting the spread spectrum chip code as a modulating voltage to the modulation input of said **modulation means**;
>
> **preamble means** coupled to the modulation input of said **modulation means** for **storing** a preamble, and outputting the preamble as a modulating voltage to the modulation input of said **modulation means**;
>
> **address means** coupled to the modulation input of said **modulation means** for **storing** a device address, and outputting the device address as a modulating voltage to the modulation input of said **modulation means**; and

wherein said **preamble means**, and said **address means**, sequentially output the preamble, and device address, to the modulation input and the spread spectrum chip code from said **chip code generating means** spread the preamble, and device address at the modulation input to generate the spread spectrum of an RF signal, and wherein the preamble provides acquisition for spread spectrum snychronization of the spread spectrum of the RF signal, for demodulating the spread spectrum of the RF signal.

12. The apparatus as set forth in claim 9 further including error-detection means coupled to said[2] **data register** for generating an error detection algorithm.

13. A method using processor means for controlling a spread spectrum transmitter having an **oscillator with a modulation input** and an RF power amplifier with a keying input, comprising the steps, performed by said processor means, of:

storing a spread spectrum chip code in **chip code generation means** coupled to the modulation input of said oscillator;

outputting, during a transmitting interval, a preamble from a **preamble register** to the modulation input of said oscillator;

outputting, during a transmitting interval, a device address from an **address register** coupled to the modulation input of said oscillator;

outputting simultaneously, during the transmitting interval, data from a **data register** and the spread spectrum chip code **stored** in said **chip code generation means**, to the modulation input of said oscillator, thereby generating a spread spectrum signal including the data; and

generating an enabling signal and a keying signal during the transmitting interval, from a timing circuit coupled to the enable input of said oscillator and to the keying input of said RF power amplifier, for activating said oscillator and said RF power amplifier.

14. A method using processor means for controlling a spread spectrum transmitter having an **oscillator with a modulation input**, comprising the steps, performed by said processor means, of:

outputting, during a transmitting interval, a preamble from a **preamble register** to the modulation input of said oscillator;

outputting, during a transmitting interval, a device address from an **address register** coupled to the modulation input of said oscillator; and

outputting simultaneously, during the transmitting interval, data from a **data register** and a spread spectrum chip code **stored** in **chip code generation means**, to the

[2] At oral argument plaintiff noted that Claim 12 should read "a data register," and that this mistake was due to a drafting error.

modulation input of said oscillator, thereby generating a spread spectrum signal including the data.

I. "Register" (Claims 12, 13, 14)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
"a designated or specific region of memory in a computer processor"	"a designated or specific region of memory in a computer processor, but not a regular memory, random access memory, or memory buffer"

As noted above, the registers referenced in the '577 Patent store the component bits of the preamble, address, and data before they are modulated and sent out as RF signals. Defendants argue that the specification and prosecution history reflect the common understanding that registers are distinct from regular memory, random access memory, or memory buffers in a number of ways. Namely, that "unlike regular memory (which can hold large blocks of information), registers are too small to hold more than a few bytes" and are accessed by their name rather than through an address. Def. Opp'n at 6.

During the reexamination process, North Peak was forced to distinguish the claims of the '577 Patent from prior art references in the Dickson and Kahn publications, which disclose wireless transmitters that use DSSS to transmit packets that include a preamble, address, and data through RF signals. North Peak then argued that the references to "memory" in Kahn and Dickson did not anticipate the "registers" claimed in the '577 Patent. *See e.g.* Def. Exh. E, '577 2nd Reexam Response to Office Action at 22 ("The Dickson reference discloses that random access memory is used for 'packet buffers.' As is clear from the Dickson reference, the packet information is not stored in and outputted from the registers are [*sic.*] required in Claim 2.[3]") (internal citations omitted); *id.* at 29 ("[The Kahn] disclosure fails to disclose separate, specific memory **registers** for the preamble, address, and data. It merely indicates that this information is in memory without distinguishing whether these three types of information are stored in a single register, multiple registers, or in some other memory structure . . . [T]he Kahn reference actually

[3] While this passage references Claim 2, this argument is incorporated by reference throughout the document as it relates to the claims at issue in this order.

states: 'When a packet is transmitted, the preamble, header and text are read from the microprocessor memory under direct memory access (DMA) control.' No reference is made to any '**register.**'") (emphasis in original); *see also id.* at 24, 25, 29, 32; Def. Exh. J, 2nd Reexam Interview Summary at 2 ("[T]he term 'register' has been explained to have a specific meaning which allegedly has not been taught by Dickson and Kahn . . . [North Peak] submitted that register cannot be any type of memory, hence storing information such as preamble or address in a regular memory would not anticipate claimed invention.").

North Peak's assertions during the second reexamination make clear that it believed that regular memory (including random access memory or memory buffers) was distinct from the "registers" claimed in the '577 patent. To argue otherwise would have been tantamount to conceding that many of the '577 Patent's claims were anticipated by prior art disclosed in the Dickson and Kahn publications. Indeed, the definition of "register" used by North Peak in its submissions during reexamination emphasizes the very attributes that defendants argue distinguish registers from regular memory — namely that registers are much smaller and are accessed by their name rather than by an address. North Peak then urged this definition of register:

> [a] small, named region of high speed memory located within a microprocessor or any electronic device capable of storing binary data. A register is usually large enough to hold only a few bytes of information and is referenced in programs by a name such as AX or SF. It is used as a holding area for specific, sometimes critical, pieces of data or information related to activities going on within the system. For example, a register might be used to hold the results of an addition operation or to hold the address of a particular location in the computer's memory.

North Peak's'577 2nd Reexam Response to Office Action at 11 (citing *Computer Dictionary* at 334, Microsoft Press (2d. Ed. 1994)).

A patentee can disavow claim scope "by clearly characterizing the invention in a way to try to overcome rejections based on prior art." *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed.Cir.2008). "Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers." *Spectrum Intern., Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1379 (Fed.Cir.1998); *see also Kilopass Tech. Inc. v. Sidense Corp.*, No. C 10-02066 SI, 2012 WL 3545286, at *5-6 (N.D. Cal. Aug. 16, 2012) *aff'd*, 501 F. App'x 980 (Fed. Cir. 2013). While a prosecution disclaimer requires a "clear and unambiguous disavowal of claim

scope," *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 833 (Fed. Cir. 2003), "applicants rarely submit affirmative disclaimers along the lines of 'I hereby disclaim the following . . .' during prosecution and need not do so to meet the applicable standard." *Saffran v. Johnson & Johnson*, 712 F.3d 549, 559 (Fed. Cir. 2013). Here, North Peak made numerous statements to the PTO which unambiguously reject the notion that "register" may be defined to include regular memory.[4] Its statements also reflect its understanding that one skilled in the art would interpret registers to be distinct from regular memory, random access memory, or memory buffers.

While the Court generally agrees with defendants' arguments as to claim scope, it cannot adopt defendants' proposed construction. Defendants' construction is essentially a non-infringement argument under the thinly-veiled guise of claim construction. Moreover, defining a term by a non-exhaustive list of the things that it is not, is clumsy and imprecise solution. Therefore the Court will rely on the dictionary definition cited by North Peak during the prosecution, and define "register" to mean: "a small, named region of high speed memory located within a microprocessor or any electronic device capable of storing binary data. A register is usually large enough to hold only a few bytes of information and is referenced in programs by a name, rather than an address."

II. "Preamble Register," "Address Register," and "Data Register" (Claims 12, 13, 14)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction proposed.	"an explicit register that stores and outputs the transmitted [data/address/preamble]"

Defendants argue that North Peak relied on the term "explicit register" to overcome prior art during the reexamination process, and that it should therefore be included in the definition. North Peak argues that the use of the modifier "explicit" is redundant and unnecessary. North Peak

[4] While the specification does at one point describe "chip words" being stored in random access memory, this portion of the written description relates to receivers, which are not covered by the claims at issue. Patent '577 Patent 10:63-66.

further argues that the term "transmitted" should be omitted from the definition because it gives the misleading impression that the data which is transmitted is the same as the data that is stored.

While the term "explicit register" does not appear in the patent, the patent clearly contemplates the use of three separate registers, each dedicated to storing and outputting the preamble, address, and data, respectively. '577 Patent 6:30-62. North Peak highlighted this feature of the invention to distinguish it from prior art throughout the prosecution history. *See* '577 2nd Reexam Response to Office Action at 29 ("the Kahn reference fails to disclose the explicit register structure of Claim 2[5], which recites separate claim elements for a 'preamble register,' an 'address register,' and a 'data register.'"); Def. Exh. G, Amendment to Application 3/20/1990 at 11 ("The difference between Eden et al. and the claimed invention, as stated by the Examiner, is the use of explicit registers to store the preamble, address, chip code and data to modulation."). Accordingly, the use of the modifier "explicit" is not mere surplusage as North Peak suggests.

However, North Peak is correct to assert that "[t]here is no requirement in the claim that the 'preamble,' 'address,' or 'data information' stored and outputted by those registers is the 'transmitted' version of those values." Pl. Brf. at 15. Indeed, as noted above, the bits that are stored and outputted by the registers are later "spread" using a chip code which converts them into a series of chips before they are transmitted.

Therefore, the Court construes "[preamble/address/data] register" to mean "an explicit register that stores and outputs [preamble/address/data] information."

III. "Storing/Stored" (Claims 9, 12)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction proposed.	"writing/written"

North Peak argues that "stored" is used in its plain and ordinary sense as one skilled in the art would understand it. It suggests its plain meaning is "placed, retained, or inserted," and therefore needs no further construction. Pl. Rep. at 7. Defendants propose construing "stored" to

[5] *See* nt. 3, *supra*.

mean "written." They reason that the only components described as performing the "storing" function are different types of memory. Defendants argue that "writing" connotes that the information is being stored to memory, and is therefore a more appropriate construction because every time the word stored is used in the patent it refers to registers or some other type of memory. Def. Opp'n at 17. North Peak agrees that "writing/written" is a proper way to define storing information to memory; however it disagrees that the word "store/stored" is always used to describe memory. It cites Claims 13 and 14 which recite "storing" the chip code in a "chip code generation means." North Peak argues that this chip code generation means could encompass a non-memory component such as hardware logic, and therefore cannot be characterized as being "written" to. However for the reasons stated below, *see* Section IV(B), *infra*, the Court disagrees that a "chip code generation means" can encompass a non-memory component. Accordingly, the Court construes "storing/stored" to mean "writing/written."

IV. "Chip Code Generation Means" (Claims 9, 12, 13, 14)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
In Claims 9 and 12, means-plus-function: Function: "storing a spread spectrum chip code, and outputting the spread spectrum chip code as a modulating voltage to the modulation input of said modulation input of said modulation means" Structure: "a recirculating shift register, a shift register with exclusive ORed feedback taps, or the circuit of Fig. 3B, and equivalents"[6]	Means-plus-function: Function: "(1) storing a spread spectrum chip code; (2) outputting the spread spectrum chip code as a modulating voltage to the modulation input of a modulation means or oscillator." Structure: "recirculating shift register (10) shown in Fig. 2 and described at 6:22-29, resistor R7 shown in Fig. 2 and described at 6:40-42, and 7:64-8:5, and additional circuitry

[6] Plaintiff appends "and equivalents" to each of its proposed constructions of means-plus-function terms. "An accused device with a structure that is not identical to the structure described in the patent will literally infringe the patent if the accused device performs the identical function required by the means-plus-function claim with a structure identical *or equivalent* to that described in the patent." *PCTEL, Inc. v. Agere Sys., Inc.*, No. C 03-2474 MJJ, 2005 WL 2206683, at *4 (N.D. Cal. Sept. 8, 2005) (emphasis added). Structural equivalence under § 112[f] is, as noted by the Supreme Court, 'an application of the doctrine of equivalents . . . in a restrictive role.'" *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267 (Fed. Cir. 1999) (citing *Warner–*

In Claims 13 and 14: "circuitry that provides a chip code."	required to store a spread spectrum chip code as shown in Fig. 2 and described at 7:20-30"

The parties agree that, as it is used in Claims 9 and 12, "chip code generation means" is a means-plus-function term subject to § 112(f); however, North Peak contends that it is not a means-plus-function term as employed in Claims 13 and 14. As to Claims 9 and 12, the parties essentially agree on the function, but present different proposed structures.

A. Claims 9 and 12

Both parties agree that "a recirculating shift register" is a properly disclosed structure. However defendants argue that the structure should not include "shift register with ORed feedback taps" or "the circuit of Fig. 3B." '577 Patent 5:40-42. The specification discloses that a "chip-code-generation means may be embodied as a shift register with exclusive ORed feedback taps." *Id.* However, "[u]nless the structures are clearly associated with the claimed function, they cannot be corresponding structures for purposes of § 112[f]." *Omega Eng'g, Inc, v. Raytek Corp.*, 334 F.3d 1314, 1332 (Fed. Cir. 2003). Nothing in the specification links a shift register with ORed feedback taps to the function of storing or outputting a spread spectrum chip code, and it therefore cannot be a claimed structure. *Cf.* '577 Patent 2:14-18 ("The recirculating register is coupled to the modulation input of the oscillator for storing the spread spectrum code. The recirculating register

---

Jenkinson Co., Inc. v. Hilton Davis Chem. Co., 520 U.S. 17, 28 (1997)). While claim construction is a matter of law, "[t]he scope of literally infringing 'equivalents' under § 112[f] is a factual determination" best reserved for a later stage of the litigation. *Symbol Technologies, Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1575 (Fed. Cir. 1991). Accordingly, the Court declines to include "and equivalents" in the construction of means-plus-function terms. *See Carotek, Inc. v. Kobayashi Ventures, LLC*, No. 07 CIV. 11163 NRB, 2011 WL 4056746, at *16 (S.D.N.Y. Sept. 8, 2011) ("However, we do not agree that the 'equivalent structures' language should be expressly included in the definition of the claim term . . . [W]e agree with Kobayashi that the identification of equivalent structures is an analytical step that is distinct from the identification of structure in the specification and is more appropriately reserved for an infringement analysis."); *see e.g. Network Appliance, Inc. v. Bluearc Corp.*, No. C03-5665MHP, 2005 WL 6225197, at *6 (N.D. Cal. Jan. 7, 2005) (omitting "and equivalents" from construction of means-plus function term); *but see WhatsApp Inc. v. Intercarrier Commc'ns, LLC*, No. 13-CV-04272-JST, 2014 WL 5306078, at *9 (N.D. Cal. Oct. 16, 2014) ("WhatsApp offers no reason why the statutory language, 'and equivalents thereof' should not be included in the construction of this term.").

also outputs the spread spectrum chip code as a modulating voltage to the modulation input of the oscillator."). North Peak's desire to include "the circuit of Fig. 3B" as a structure fails for the same reason. The portion of the specification cited in support relates to receivers – not the transmitters that are covered by the claims at issue – and describes an entirely unrelated function. *See id.* 9:20-25.

Defendants argue that North Peak has omitted from its proposed structure certain components that are necessary to carry out the disclosed function. Namely, they argue that the chip code is stored through "programming circuitry," and that the chip code is output as a modulating voltage to the modulation input through "resistor R7." In sum, defendants argue that resistor R7 is necessary to create the modulating voltage, and the programming circuitry is necessary to store the chip code, and therefore they must both be included as part of the structure.

As it relates to whether resistor R7 is necessary to create modulating voltage, both parties cite the same passage:

> Included in the microprocessor 8 is a recirculating register 10 coupled to the modulation input of the voltage controlled oscillator through second resistor R7. The recirculating register 10 stores a spread spectrum chip code, and outputs, during a transmitting interval, the spread spectrum chip code as a modulating voltage to the modulation input of voltage controlled oscillator 2.

'577 Patent 6:22-29.

Read in isolation, the second sentence appears to indicate that the recirculating register supplies the voltage modulation, because it outputs the chip code "as a modulating voltage to the modulation input of voltage controlled oscillator 2." However, we know from the first sentence that before reaching the modulation input, the chip code first passes through resistor R7. Resistor R7 is described elsewhere in the specification as playing a role in the voltage modulation process. *See id.* 8:1-5 ("The voltage swing in conjunction with a *modulation setting second resistor R7* creates a proportional current which modulates voltage controlled oscillator 2 thereby generating a spread spectrum FSK signal.") (emphasis added). Conversely, the specification never states that the recirculating register alone is capable of voltage modulation. Therefore, read in light of the

specification as a whole, one skilled in the art would understand that resistor R7 plays an "essential part" in creating the modulating voltage; it therefore must be included in the structure. *See Globetrotter Software, Inc. v. Elan Computer Grp., Inc.*, 236 F.3d 1363, 1367-68 (Fed. Cir. 2001).

Next, defendants argue that programming circuitry is required to perform the storing function. The specification states that "during installation of the transmitter . . . a spread spectrum chip code stored in the recirculating register 10 are loaded via programming connector 16." '577 Patent 7:20-24. However, this passage makes clear that the programing circuitry does not play any part in the storage process, but rather *loads* the chip code, which is subsequently stored in the recirculating register. While loading the chip code is a condition precedent to its storage, the programing circuitry plays no role in the function of storing itself. *See Asyst Technologies, Inc. v. Empak, Inc.*, 268 F.3d 1364, 1371 (Fed. Cir. 2001) ("The corresponding structure to a function set forth in a means-plus-function limitation must actually perform the recited function, not merely enable the pertinent structure to operate as intended.").

Accordingly, the Court construes the function of "chip code generation means" to be: "storing a spread spectrum chip code and outputting the spread spectrum chip code as a modulating voltage to the modulation input of a modulation means or oscillator," and the structure to be: "a recirculating shift register and second resistor R7."

B. Claims 13 and 14

North Peak argues that "chip code generating means" is not a mean-plus-function term as it is used in claims 13 and 14. To prevail on this argument, it must overcome two presumptions: (1) the presumption that the word "means" denotes a means-plus-function claim, *see Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015), and (2) the presumption that any given term carries the same meaning when used throughout the patent. "'[T]he same terms appearing in different portions of the claims should be given the same meaning unless it is clear from the specification and prosecution history that the terms have different meanings at different portions

of the claims.'" *Frank's Casing Crew & Rental Tools, Inc. v. Weatherford Int'l, Inc.*, 389 F.3d 1370, 1377 (Fed. Cir. 2004) (quoting *Fin Control Sys. Pty, Ltd. v. OAM, Inc.*, 265 F.3d 1311, 1318 (Fed.Cir.2001)); *Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1371 (Fed. Cir. 2005) ("Of course, this court interprets claim terms consistently throughout various claims of the same patent."). North Peak's only argument for construing the term differently is its unsupported assertion that, in Claims 13 and 14, there is no corresponding function recited. However, Claims 13 and 14 recite the same function as Claims 9 and 12, and the Court will therefore construe "chip code generating means" in the same fashion. *See* '577 Patent 20:27-32, 36-40, 58-61.

V. "Preamble Means" (Claims 9, 12)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
Means-plus-function: Function: "storing a preamble, and outputting the preamble as a modulating voltage to the modulation input of said modulation means" Structure: "a preamble register, and equivalents"	Means-plus-function: Function: "(1)storing a preamble; (2) outputting the preamble as a modulating voltage to the modulation input of said modulation means" Structure: "shift register 11 shown in Fig. 2 and described at 6:30-39, including coarse lock cells 12 and fine lock cells 24, resistor R6 shown in Fig. 2 and described at 6:39-42 and 8:8-9, and additional circuitry required to store preamble as shown in Fig. 2 and described at 7:20-30"

The parties agree that "preamble means" is a means-plus-function limitation, and also agree on the recited function. However, the parties disagree as to the proper corresponding structure. At the core of this disagreement is a dispute over whether a preamble register alone is able to create a modulating voltage, and then deliver the preamble information as a modulating voltage to the modulation input. North Peak contends that it can, while defendants assert that this function also requires the use of the R6 resistor and programming circuitry shown in Fig. 2 of the specification. These are precisely the same arguments the parties marshaled in their dispute concerning the construction of "chip code generation means" in Claims 9 and 12. The only difference is that instead of second resistor R7 connecting the register to the modulation input, its

first resistor R6. *See* Section D, *supra*.

North Peak relies heavily on the passage in the specification which states that "the preamble means can be embodied as a preamble register." '577 Patent 2:11-12; *id* 5:39-40 (same). However, this alone is insufficient to disclose structure because it makes no mention of "storing" or "outputting as a modulating voltage" and therefore fails to "clearly link[] or associate[] that structure to the function recited in the claim." *Medtronic*, 248 F.3d at 1311.

Defendants cite the following passage to show that the R6 resistor is a necessary component in the voltage modulation process:

> The preamble register 11 is coupled to the modulation input of the voltage controlled oscillator 2 through first resistor R6. The preamble includes the coarse lock preamble and the fine lock preamble. The preamble register 11 stores a coarse lock preamble in cells 12 and a fine lock preamble in cells 24. The preamble register 11 outputs during the transmitting interval, the coarse lock preamble and the fine lock preamble as a modulating voltage to the modulation input of the voltage controlled oscillator 2 through first resistor R6. First resistor R6 and second resistor R7 are chosen such that the desired spreading from the chip code and the data coming from the preamble register 11 is achieved.

'577 Patent 6:30-42

This passage puts into relief that resistor R6 is indeed necessary to create a modulating voltage and ouput the information to the modulation input. Defendants also urge the Court to find that the programing circuitry is necessary to accomplish the storing function; however, for the reasons stated in its construction of "chip code generation means," the Court finds this argument unpersuasive.

Accordingly, the Court construes the function of "preamble means" to be: "storing a preamble, and outputting the preamble as a modulating voltage to the modulation input of said modulation means," and construes the structure to be: "a preamble register and resistor R6."

VI. "Address Means"

Plaintiff's Proposed Construction	Defendants' Proposed Construction
Means-plus-function: Function: "storing a device address, and outputting the device address as a modulating voltage to the modulation input of said modulation means" Structure: "an address register, and equivalents"	Means-plus-function: Function: "(1) storing a device address; (2) outputting the device address as a modulating voltage to the modulation input of said modulation means" Structure: "shift register 14 coupled through preamble register as shown in Fig. 2 and described at 6:43-50, resistor R6 shown in Fig. 2 and described at 6:39-42 and 8:8-9 and additional circuitry required to store an address as shown in Fig. 2 and described at 7:20-30"

As North Peak notes, "[t]he parties' dispute for the term 'address means' tracks the disputes for 'preamble means' and 'chip code generation means.'" Pl. Rep. at 12. Accordingly, for the reasons stated in construing those two terms, the Court construes the function of "address means" as "storing a device address, and outputting the device address as a modulating voltage to the modulation input of said modulation means," and construes the structure to mean "an address register coupled through a preamble register and resistor R6."

VII. "Modulation Means" (Claim 9, 12)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
Means-plus-function: Function: "modulating an RF signal with spread spectrum for reducing interference" Structure: "a voltage controlled oscillator, a tuned oscillator with a PSK modulator, or	Means-plus-function: Function: "modulating an RF signal with spread spectrum for reducing interference" Structure: "a voltage controlled oscillator as shown in Fig. 2, element 2, and described at

equivalents thereof"	5:60-68 and 8:1-8, or a capacitor and inductor tuned oscillator with PSK modulator, as described at 6:9-10"

The parties agree that "modulation means" is a means-plus-function limitation, and agree on the recited function. The parties further agree that one of the recited structures is "a voltage controlled oscillator." As to the second structure, North Peak would omit "capacitor and inductor" from defendants' proposed construction. The entire disclosure reads: "The voltage controlled oscillator 2 also can be replaced by a capacitor and inductor tuned oscillator and a phase shift keyed modulator, or any other means for generating a signal." '577 Patent 6:7-11. North Peak makes two arguments in support of its proposed construction: (1) it cites comments it made during the prosecution supporting its own construction, and (2) it notes that it is proposing a narrower construction than what it is entitled to, given that it has omitted the "or any other means for generating a signal" language from its proposal.

During the course of the first reexamination, plaintiff espoused the same construction as it does today. *See* Pl. Exh. C at 23. However, the "the scope of [a means-plus-function] claim is not limitless, but is confined to structures expressly disclosed in the specification and corresponding equivalents." *Symbol Technologies, Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1575 (Fed. Cir. 1991). Therefore, having availed itself of the convenience of expressing a claim element in means-plus-function format, North Peak cannot now rely on self-serving statements made during the prosecution to broaden the scope of the structure beyond what was actually disclosed in the specification. Next, omitting the vague catch-all "or any other means for generating a signal" from its proposed construction is hardly a concession given that it would almost certainly fail meet the requisite of § 112(f) which dictates that the "corresponding structure must include all structure that actually performs the recited function." *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed. Cir. 2002).

Accordingly, the Court construes the function of "modulation means" to be: "modulating an RF signal with spread spectrum for reducing interference," and the structure to be: "a voltage controlled oscillator, or a capacitor and inductor tuned oscillator with phase shift key ("PSK") modulator."

VIII. "Modulating an RF Signal" (Claims 9, 12)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary; plain and ordinary meaning.	"spreading[7] preamble, address, and data bits with a spread spectrum chip code at RF, not at baseband"

North Peak argues that "modulating an RF signal" requires no construction because one of ordinary skill in the art would understand what the term means. However, North Peak provides no technical evidence in support of this contention, nor does it provide evidence of a definition of what one skilled in the art would understand the disputed term to mean. Moreover, given the technical nature of the term, failing to construe "modulating an RF signal" would risk falling short of the Court's duty to "ensure that the jury fully understands the court's claim construction rulings and what the patentee covered by the claims." *Power-One, Inc. v. Artesyn Technologies, Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010), (quoting *Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1366 (Fed.Cir.2004)).

Claim 9 describes "an apparatus coupled to modulation means having a modulation input for **modulating an RF signal** with spread spectrum for reducing interference, for controlling said

[7] Defendants originally proposed to use the word "combining," but informed the Court at oral argument that they would agree to change their proposed construction to "spreading" to address North Peak's concerns.

spread spectrum transmitter." (emphasis added). Claim 9 later describes using the chip code to spread the preamble and address to generate an RF signal. *See id.* ("the spread spectrum chip code from said chip code generating means spread[s] the preamble, and device address at the modulation input to generate the spread spectrum of an RF signal."). The plain language of the claim describes modulating an RF signal – rather than a base band signal, or some other type of signal. It also discloses spreading the preamble and address at the modulation input. Additionally, the specification describes the preamble, address, and data information being output sequentially and later being modulated by a chip code. *See* '577 Patent 6:30-62. Indeed, this is precisely how the patentees described the invention during the application process: "The spread spectrum chip code from the chip code generating means spreads the preamble, device address, and information data, simultaneously, at the modulator to generate the spread spectrum of an RF signal." Amendment to Application 3/20/1990 at 11.

Defendants also point to the prosecution history of the continuation '058 Patent, wherein two inventors of the '577 Patent distinguish their invention from other spread spectrum transmitters that spread the signal at baseband. *See* Def. Exh. H at 26-27 ("Conventional spread spectrum transmitters created a spread signal at baseband and then up-converted the signal through mixers injected with local oscillators to obtain the desired transmit frequency. This requires expensive mixer, filter and local oscillator components or other multiplication devices. The instant invention does not require the use of these extra components, and thus has much greater commercial practicality.") (internal citations omitted). Defendants have also introduced evidence showing that an inventor of the '577 Patent agrees that the specification discloses an apparatus that creates a spread signal at the RF carrier frequency. Def. Exh. F, Rouquette Depo at 199:1-12 (**Q:** "Now would you agree that what's shown there in Figure 2 is not creating a spread signal at baseband and then upconverting it?" **A:** "I agree…It is creating the spread signal at the RF carrier frequency.").

While the Court recognizes that the prosecution history supports the notion that the modulation occurs at RF, this must be weighed against the language of the patent itself which is largely silent on that issue. The patent speaks of modulating "an RF signal" at "the modulation input" but does not describe whether that modulation occurs at RF, at baseband, or some other frequency. Furthermore, Mr. Roquette's testimony goes to a preferred embodiment, not the claims themselves. Therefore the Court declines to include the "at RF" language proposed by defendants.

This issue of whether modulation occurs at baseband or at RF is a question of infringement rather than of claim construction, and its resolution will require a more fully developed record. Accordingly, the Court construes "modulating an RF signal" to mean "spreading the preamble, address, and data bits with a spread spectrum chip code to modulate an RF signal."

IX. "Oscillator with a Modulation Input"

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary; plain and ordinary meaning.	"a voltage controlled oscillator whose frequency control input is used as a modulation input"

Defendants urge the Court to define "oscillator" to mean a "voltage controlled oscillator" with a "frequency control" input. While the specification does disclose this embodiment, it also discloses other embodiments, such as a "capacitor and inductor tuned oscillator and a phase shift keyed modulator." '577 Patent 6:9-10. Defendants' proposed construction would improperly read limitations from the specification into the claims. While claims must be read in light of the specification, it is "improper[] [to] add a limitation appearing in the specification and the drawings, but not appearing in the unambiguous language of the claim." *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1343 (Fed. Cir. 2001).

North Peak urges the Court that "oscillator with a modulation input" needs no construction. While the parties do not explicitly agree on this point, defendants' proposed construction makes no attempt to define these terms, but rather parrots the terms and adds additional limitations. Therefore, it appears that defendants agree that the term used in its ordinary sense would be understood by one skilled in the art.

"In some cases, the ordinary meaning of claim language . . . may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314. However, in many cases, the meaning of a claim term as understood by persons of skill in the art is not readily apparent. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed.Cir.2005)). Here, the parties appear to agree that the meaning of "oscillator with a modulation input" is "readily apparent." Therefore, the Court will not construe the term beyond its plain and ordinary meaning. However, the Court may find it necessary to construe the term at a later stage of the litigation, should the parties find themselves in disagreement about its meaning.

CONCLUSION

The Court construes the disputed terms as follows.

Term	Construction
register	a small, named region of high speed memory located within a microprocessor or any electronic device capable of storing binary data. A register is usually large enough to hold only a few bytes of information and is referenced in programs by a name, rather than an address
[preamble/address/data] register	an explicit register that stores and outputs [preamble/address/data] information
storing/stored	writing/written
chip code generation means	Function: storing a spread spectrum chip code and

	outputting the spread spectrum chip code as a modulating voltage to the modulation input of a modulation means or oscillator Structure: a recirculating shift register and second resistor R7
preamble means	Function: storing a preamble, and outputting the preamble as a modulating voltage to the modulation input of said modulation means Structure: a preamble register and resistor R6
address means	Function: storing a device address, and outputting the device address as a modulating voltage to the modulation input of said modulation means Structure: an address register coupled through a preamble register and resistor R6
modulation means	Function: modulating an RF signal with spread spectrum for reducing interference Structure: a voltage controlled oscillator, or a capacitor and inductor tuned oscillator with PSK modulator
modulating an RF signal	spreading the preamble, address, and data bits with a spread spectrum chip code to modulate an RF signal
oscillator with a modulation input	No Construction; ordinary meaning. However, the Court reserves the right to construe the term at a later stage should it become necessary.

IT IS SO ORDERED.

Dated: August 28, 2015

SUSAN ILLSTON
United States District Judge

United States District Court
Northern District of California